

SEP 11 2003
LRN-03-0367



United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

**30-DAY RESPONSE TO NRC BULLETIN 2003-02
LEAKAGE FROM REACTOR PRESSURE VESSEL LOWER HEAD PENETRATIONS
AND REACTOR COOLANT PRESSURE BOUNDARY INTEGRITY
SALEM GENERATING STATION UNITS 1 AND 2
DOCKET NOS. 50-272 AND 50-311
FACILITY OPERATING LICENSES NOS. DPR-70 AND DPR-75**

The U. S. Nuclear Regulatory Commission (NRC) issued NRC Bulletin 2003-02 to inform PWR licensees that the current methods of inspecting the reactor pressure vessel (RPV) lower heads may need to be supplemented with additional measures (e.g., bare-metal visual inspections) to detect reactor coolant pressure boundary (RCPB) leakage.

All licensees are requested to provide the NRC with information related to inspections that have been or will be performed to verify the integrity of the RPV lower head penetrations. These responses are due within 30 days of the date of the NRC Bulletin for plants entering refueling outages prior to December 31, 2003 and within 90 days for all others.

Attachment 1 to this letter contains the PSEG Nuclear LLC (PSEG) Salem Generating Station Units 1 and 2 response to the requested information in NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," dated August 21, 2003.

Attachment 2 provides a summary of the commitments contained in the response.

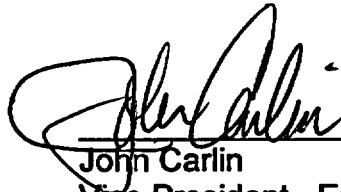
SEP 11 2003

Should you have any questions regarding this response, please contact Michael Mosier at (856) 339-5434.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Executed on 11 September 2003



John Carlin
Vice President - Engineering

Attachments

SEP 11 2003

**C: Mr. H. J. Miller, Administrator - Region I
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USNRC Senior Resident Inspector – Salem (X24)

**Mr. K. Tosch, Manager IV
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REQUESTED INFORMATION:

- (1) All subject PWR addressees are requested to provide the following information. The responses for facilities that will enter refueling outages before December 31, 2003, should be provided within 30 days of the date of this bulletin. All other responses should be provided within 90 days of the date of this bulletin.**

 - (a) A description of the RPV lower head penetration inspection program that has been implemented at your plant. The description should include when the inspections were performed, the extent of the inspections with respect to the areas and penetrations inspected, inspection methods used, the process used to resolve the source of findings of any boric acid deposits, the quality of the documentation of the inspections (e.g., written report, video record, photographs), and the basis for concluding that your plant satisfies applicable regulatory requirements related to the integrity of the RPV lower head penetrations.**
 - (b) A description of the RPV lower head penetration inspection program that will be implemented at your plant during the next and subsequent refueling outages. The description should include the extent of the inspections which will be conducted with respect to the areas and penetrations to be inspected, inspection methods to be used, qualification standards for the inspection methods, the process used to resolve the source of findings of boric acid deposits or corrosion, the inspection documentation to be generated, and the basis for concluding that your plant will satisfy applicable regulatory requirements related to the structural and leakage integrity of the RPV lower head penetrations.**
 - (c) If you are unable to perform a bare-metal visual inspection of each penetration during the next refueling outage because of the inability to perform the necessary planning, engineering, procurement of materials, and implementation, are you planning to perform bare-metal visual inspections during subsequent refueling outages? If so, provide a description of the actions that are planned to enable a bare-metal visual inspection of each penetration during subsequent refueling outages. Also, provide a description of any penetration inspections you plan to perform during the next refueling outage. The description should address the applicable items in paragraph (b).**

- (d) If you do not plan to perform either a bare-metal visual inspection or non-visual (e.g., volumetric or surface) examination of the RPV lower head penetrations at the next or subsequent refueling outages, provide the basis for concluding that the inspections performed will assure applicable regulatory requirements are and will continue to be met.

PSEG RESPONSE:

The next refueling outages for Salem Generating Stations Units 1 and 2 are Spring 2004 and Fall 2003, respectively. The response to this Bulletin is being submitted within 30 days for both units since the inspections performed to date and those that will be performed are the same.

Current Inspection Program

The current reactor pressure vessel (RPV) lower head inspection program consists of ASME Section XI system pressure tests and containment walkdowns.

ASME Section XI system pressure tests for the RPV lower head are conducted in accordance with the requirements imposed by IWA-2430 and IWB-2412. Class 1 system pressure tests are conducted in accordance with Examination Category B-P, Pressure Retaining Components, and are required to be completed at the conclusion of each refueling outage during plant start up (approximately every 18 months). System pressure test visual examinations, VT-2, are conducted in accordance with ASME XI requirements and procedure SH.RA-IS.ZZ-0005 (Q), "*VT-2 Visual Examination of Nuclear Class 1, 2 and 3 Systems.*" These visual exams are conducted at close range using additional lighting and are documented by completion of the procedure. The RPV lower head is covered by reflective mirror insulation. VT-2 examinations of the RPV lower head do not require insulation removal unless borated water leakage is discovered. If leakage is discovered, insulation removal is necessary to evaluate the condition of the base material and other adjacent areas.

Containment walkdowns of the RPV lower head area are performed during plant shutdowns, for both forced and refueling outages, in accordance with Salem's Boric Acid Corrosion Management Program. The purpose of these walkdowns is to identify boric acid leakage. These walkdowns occur upon descension and ascension into Mode 3 in accordance with the requirements of S1.OP-PT.CAN-0001 (Q), and S2.OP-PT.CAN-0001 (Q), *Containment Walkdown*. The walkdown for a forced outage need not be completed if previously completed within the prior 30 days. Procedure signoff provides documentation of the inspection.

Any findings of boric acid deposits are resolved in accordance with procedure SH.RA-AP.ZZ-8805 (Q), "*Boric Acid Corrosion Management Program.*" Attachment 2 of

SH.RA-AP.ZZ-8805 (Q), Corrective Action Process Flow Chart, outlines the process to be followed once boric acid corrosion leakage has been identified.

Planned Inspections (next refueling outage)

For the next refueling outages (1R16, 2R13) and subsequent refueling outages, the RPV lower head inspection program will include previously discussed inspections as well as a 100 percent Bare Metal Visual (BMV) examination (VT-2) of the bottom reactor pressure vessel (RPV) head. There are 58 bottom-mounted instruments (BMI) associated with each unit. The examination will be a 360-degree VT-2 examination of each penetration at the interface between the penetration and the bottom vessel head. This examination will be performed in accordance with SC.RA-IS.RC-0001 (Q), "*Vessel Head Penetration Examination*." Personnel qualified to perform VT-2 examinations in accordance with SH.ER-AS.ZZ-0001 (Q), "Qualification and Certification Program for Nondestructive (NDE) Examination Personnel," will perform these examinations. Any findings of boric acid deposits will be resolved using SH.RA-AP.ZZ-8805 (Q), *Boric Acid Corrosion Management Program*. Attachment 2 of SH.RA-AP.ZZ-8805 (Q), Corrective Action Process Flow Chart, outlines the process to be followed once boric acid corrosion leakage has been identified. Procedure signoff provides documentation of the inspection.

Based upon current design it is anticipated that 100 percent BMV examination of all 58 BMI penetrations can be performed during 1R16 and 2R13. Any unanticipated obstructions that are encountered during the performance of the VT-2 examinations will be resolved so that 100 percent BMV examinations can be conducted at subsequent plant refueling outages.

PSEG will submit a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, any unanticipated areas of inaccessibility, a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found within 30 days after plant restart following the inspection of the lower head penetrations performed during the 1R16 and 2R13 refueling outages.

COMMITMENTS

As part of the response to the request for additional information PSEG commits to the following:

1. Based upon current design it is anticipated that 100 percent BMV examination of all 58 BMI penetrations can be performed during 1R16 and 2R13. Any unanticipated obstructions that are encountered during the performance of the VT-2 examinations will be resolved so that 100 percent BMV examinations can be conducted at subsequent plant refueling outages.